

Spaceborne SAR at UHF

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Abstract

Imaging radar measurements at UHF (P-Band) have been found to be useful for many Earth science applications, notably monitoring forest growth, and land use mapping. To date, all such data have been obtained from airborne platforms which are necessarily local in coverage. There is a growing need for regional and global scale monitoring of the world's forests on a regular basis and at appropriate times of the year. A spaceborne SAR operating at UHF in the region of 400 MHz would greatly contribute to fulfilling this need.

The problems involved in deploying a spaceborne UHF SAR include: the current lack of a frequency allocation for active microwave sensors in this frequency band; interference within this waveband; the relatively large size of antenna needed; the effects of the ionosphere on image formation; Faraday rotation caused by the ionosphere; and calibration of the data products.

This paper will address the challenges involved in designing a spaceborne SAR at UHF. Two mission design solutions will be presented, the first using a relatively small (6m diameter) reflector antenna, the second using a more conventional 12 x 5 m planar array.

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